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THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pioneer Hi-Bred International, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (1970, 84 Stat. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CORN

'PHK56'



In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D. C. this 30th day of August in the year of our Lord one thousand nine hundred and ninety-one.

Attest:

Kenneth H. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service



Robert Lee Segebart
App. No. 10/768,338

REF
A7

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Agriculture, Clearance Office, OIRM, Room 404-W, Washington, D.C. 20250, and to the Office of Management and Budget, Paperwork Reduction Project (OMB 0581-0051), Washington, 20250.

FORM APPROVED: OMB 0581-0051, Expires 1/11/91

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions on reverse)

1 NAME OF APPLICANT(S) (as it is to appear on the Certificate) Pioneer Hi-Bred International, Inc.		2 TEMPORARY DESIGNATION OR EXPERIMENTAL NO.	3 VARIETY NAME PHK56
4 ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) Plant Breeding Division Department of Corn Breeding PO Box 85 Johnston, IA 50131-0085		5 PHONE (Include area codes) 515/270-3300	6 FOR OFFICIAL USE ONLY PVPO NUMBER 9000247
6 GENUS AND SPECIES NAME Zea mays		7 FAMILY NAME (Botanical) Gramineae	8 FILING Date Time □ A.M. □ P.M.
8 CROP KIND NAME (Common Name) Corn		9 DATE OF DETERMINATION March 1988	10 FILING AND EXAMINATION FEE \$ 2150.00 Date August 28, 1990
10 IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation		11 IF INCORPORATED, GIVE STATE OF INCORPORATION Iowa	
		12 DATE OF INCORPORATION May 6, 1926	13 CERTIFICATE FEE \$ 250.00 Date July 26, 1991
13 NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Dr. Bruce D. McBratney Plant Breeding Division Pioneer Hi-Bred International, Inc. PO Box 85 Johnston, IA 50131-0085			
14 PHONE (Include area codes): 515/270-3546			
14 CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)			
<input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety <input checked="" type="checkbox"/> Exhibit B, Novelty Statement <input checked="" type="checkbox"/> Exhibit C, Objective Description of Variety <input checked="" type="checkbox"/> Exhibit D, Additional Description of Variety <input checked="" type="checkbox"/> Exhibit E, Statement of the Basis of Applicant's Ownership <input checked="" type="checkbox"/> Seed Sample (2,500 viable untreated seeds) Date Seed Sample mailed to Plant Variety Protection Office AUGUST 24, 1990 <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States"			
15 DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act) <input type="checkbox"/> YES (If "YES," answer items 16 and 17 below) <input checked="" type="checkbox"/> NO (If "NO," skip to item 18 below)			
16 DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input type="checkbox"/> NO		17 IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED	
18 DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? <input type="checkbox"/> YES (If "YES," through <input type="checkbox"/> Plant Variety Protection Act <input type="checkbox"/> Patent Act Give date _____) <input checked="" type="checkbox"/> NO			
19 HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> YES (If "YES," give names of countries and dates) <input checked="" type="checkbox"/> NO			
20 The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT (Owner(s)) Pioneer Hi-Bred International, Inc.		CAPACITY OR TITLE	DATE
SIGNATURE OF APPLICANT (Owner(s)) <u>Bruce D. McBratney</u>		CAPACITY OR TITLE Technical Support Coordinator	8/15/90

14A. Exhibit A. Origin and Breeding History

Pedigree: PHG47/PHG35)X9312X

Pioneer Line PHK56, Zea mays L., a yellow dent corn inbred, was developed by Pioneer Hi-Bred International, Inc. from the single cross PHG47 x PHG35 using the pedigree method of breeding. The progenitors of PHK56 are proprietary inbred lines of Pioneer Hi-Bred International, Inc. Selfing and selection were practiced within the above F1 cross for six generations in the development of PHK56 at Marion, Iowa. During line development, crosses were made to inbred testers for the purpose of estimating the line's combining ability. Yield trials were grown at Marion, Iowa, as well as other Pioneer research stations in the mid-maturity areas of the United States Corn Belt. After initial testing, additional hybrid combinations have been evaluated and subsequent generations of the line have been grown and hand-pollinated with observations made for uniformity.

PHK56 has shown uniformity and stability for all traits as described in Exhibit C - "Objective Description of Variety". It has been self-pollinated and ear-rowed a sufficient number of generations with careful attention paid to uniformity of plant type to assure genetic homozygosity and phenotypic stability. The line has been increased both by hand and in isolated fields with continued observations for uniformity.

No variant traits have been observed or are expected in PHK56.

Developmental History for PHK56

<u>Season/Year</u>	<u>Inbreeding Level</u>
Winter 1980	F0 (Cross made)
Summer 1980	F1
Summer 1981	F2
Summer 1982	F3
Summer 1983	F4
Summer 1984	F5
Summer 1985	F6
Summer 1986	F7*
Summer 1987	F8
Summer 1988	F9
Summer 1989	F10**

* PHK56 was selfed and selected through F7 generation.

** PHK56 was selfed and ear-rowed from F8 through F10 generations.

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Exhibit A: During the early development (F1-F2) of the inbreds, selection was based on agronomic characteristics (e.g., plant height, stalk lodging, disease and insect resistance, etc.) whereas, from F3 through later generations selection was based on yield as well as agronomic characteristics. The most important traits during selection would be those described in the definitions section and in Exhibit D. Yield is looked at on a per se basis and how well an inbred performs in hybrid combination.

14B. Exhibit B. Novelty Statement

PHK56 is most similar to the Pioneer Hi-Bred International, Inc. proprietary inbred line PHW43 (PVP Certificate No. 8900326). PHK56 is earlier in maturity compared to PHW43. PHK56 sheds pollen and silks approximately 50 (1420 versus 1470) and 40 (1460 versus 1500) growing degree units earlier than PHW43. The leaf sheath of PHK56 has more pubescence (medium version light) than PHW43. The silk color of PHK56 is pink, has a horizontal ear shank, and slightly curved kernel rows whereas PHW43 has red silk, an upright ear shank, and straight kernel rows.

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VARIETY DESCRIPTION INFORMATION

INBRED - PHK56

Type: DENT

Region Best Adapted: Northcentral

A. Maturity: Average across maturity zones. Zone : 0

Heat Unit Shed: 1420
Heat Unit Silk: 1460
No. Reps: 59

HEAT UNITS =
$$\frac{[\text{Max. Temp. } (<86^{\circ}\text{F.}) + \text{Min. Temp. } (>50^{\circ}\text{F.})]*}{2} - 50$$

* If maximum is greater than 86 degrees fahrenheit, then 86 is used and if minimum is less than 50, then 50 is used. Heat units accumulated daily and can not be less than 0.

B. Plant Characteristics:

Plant height (to tassel tip): 216 cm
Length of top ear internode: 12 cm
Number of ears per stalk: Single
Ear height (to base of top ear): 82 cm
Number of tillers: None
Cytoplasm type: Normal

C. Leaf:

Color: (WF9) Medium Green
Angle from Stalk: 30-60 degrees
Marginal Waves: (OH7L) Many
Number of Leaves (mature plants): 18
Sheath Pubescence: (WF9) Medium
Longitudinal Creases: (PA11) Many
Length (Ear node leaf): 72 cm
Width (widest point, ear node leaf): 10 cm

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D. Tassel:

Number lateral branches: 6
Branch Angle from central spike: 30-40 degrees
Pollen Shed: Heavy based on Pollen Yield Test
(107% of experiment means)
Peduncle Length (top leaf to basal branches): 25 cm
Anther Color: Yellow
Glume Color: Green

E. Ear (Husked Ear Data Except When Stated Otherwise):

Length: 17 cm
Weight: 142 gm
Mid-point Diameter: 42 mm
Silk Color: Pink
Husk Extension (Harvest stage): Medium (Barely Covering Ears)
Husk Leaf: Short (< 8 cm)
Taper of Ear: Average
Position of Shank (dry husks): Horizontal
Kernel Rows: Slightly Curved, Distinct Number = 16
Husk Color (fresh): Light Green
Husk Color (dry): Buff
Shank Length: 16 cm
Shank (No. of internodes): 8

F. Kernel (Dried):

Size (from ear mid-point)
Length: 11 mm
Width: 8 mm
Thick: 4 mm
Shape Grade (% rounds): 20-40 (30% medium round based on Parent
Test Data)
Pericarp Color: Colorless
Aleurone Color: Homozygous Yellow
Endosperm Color: Yellow
Endosperm Type: Normal Starch
Gm Wt/100 Seeds (unsized): 25 gm

G. Cob:

Diameter at mid-point: 25 mm
Strength: Strong
Color: Red

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H. Diseases:

Corn Lethal Necrosis (MCMV-Maize Chlorotic Mottle Virus and MDMV-Maize Dwarf Mosaic Virus): Intermediate
 Anthracnose Stalk Rot (C. graminicola): Intermediate
 N. Leaf Blight (E. turcicum): Intermediate
 Carbonum Leaf Blight (H. carbonum): Susceptible
 Eye Spot (K. zae): Intermediate
 Gray Leaf Spot (C. zae): Intermediate
 Goss's Wilt (C. nebrascense): Resistant
 Common Smut (U. maydis): Resistant
 Head Smut (S. reiliana): Highly Resistant
 Fusarium Ear Mold (F. moniliforme): Resistant

I. Insects:

European Corn Borer-1 Leaf Damage (Pre-flowering): Intermediate
 European Corn Borer-2 (Post-flowering): Susceptible

The above descriptions are based on a scale of 1-9, 1 being highly susceptible, 9 being highly resistant.

S (Susceptible): Would generally represent a score of 1-3.
 I (Intermediate): Would generally represent a score of 4-5.
 R (Resistant): Would generally represent a score of 6-7.
 H (Highly Resistant): Would generally represent a score of 8-9. Highly resistant does not imply the inbred is immune.

J. Variety Most Closely Resembling:

Character	Inbred
Maturity	PHW43
Usage	PHW43

PHW43 (PVP Certificate No. 8900326) is a Pioneer Hi-Bred International, Inc. proprietary inbred.

Data for Items B, C, D, E, F, and G is based primarily on a maximum of two reps from Johnston, Iowa grown in 1988, plus description information from the maintaining station.

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CLARIFICATION OF DATA IN EXHIBITS C AND D

Please note the data presented in Exhibit C, "Objective Description of Variety," is data collected primarily at Johnston, Iowa plus description information from the maintaining station. The data in Exhibit D, "Additional Description of Variety," is data from comparisons of inbreds or hybrids grown in the same tests in the adapted growing area of PHK56.

DEFINITIONS

In the description and examples, a number of terms are used herein. In order to provide a clear and consistent understanding of the specification and claims, including the scope to be given such terms, the following definitions are provided:

BAR PLT = BARREN PLANTS. This is the percent of plants per plot that were not barren (lack ears).

BRT STK = BRITTLE STALKS. This is a measure of the stalk breakage near the time of pollination, and is an indication of whether a hybrid or inbred would snap or break near the time of flowering under severe winds. Data are presented as percentage of plants that did not snap.

BU ACR = YIELD (BUSHELS/ACRE). Actual yield of the grain at harvest adjusted to 15.5% moisture. ABS is in absolute terms and % MN is percent of the mean for the experiments in which the hybrid or inbred was grown.

DRP EAR = DROPPED EARS. This is a measure of the number of dropped ears per plot and represents the percentage of plants that did not drop ears prior to harvest.

EAR HT = EAR HEIGHT. The ear height is a measure from the ground to the top developed ear node attachment and is measured in centimeters.

EST CNT = EARLY STAND COUNT. This is a measure of the stand establishment in the spring and represents the number of plants that emerge on a per plot basis for the hybrid or inbred.

GDU SHD = GDU TO SHED. The number of growing degree units (GDUs) or heat units required for an inbred line or hybrid to have approximately 50 percent of the plants shedding pollen and is measured from the time of planting. Growing degree units are calculated by the Barger Method, where the heat units for a 24-hour period are:

$$GDU = \frac{(\text{Max. temp.} + \text{Min. temp.})}{2} - 50$$

The highest maximum temperature used is 86°F and the lowest minimum temperature used is 50°F. For each inbred or hybrid it takes a certain number of GDUs to reach various stages of plant development.

GDU SLK = GDU TO SILK. The number of growing degree units required for an inbred line or hybrid to have approximately 50 percent of the plants with silk emergence from time of planting. Growing degree units are calculated by the Barger Method as given in GDU SHD definition.

GRN QUL = QUAL. = GRAIN QUALITY. This is a 1 to 9 rating for the general quality of the shelled grain as it is harvested based on such factors as the color of the harvested grain, any mold on the grain, and any cracked grain. High scores indicate good grain quality and low scores indicate poor grain quality.

MST = HARVEST MOISTURE. The moisture is the actual percentage moisture of the grain at harvest.

PLT HT = PLANT HEIGHT. This is a measure of the height of the plant from the ground to the tip of the tassel in centimeters.

RT LDG = ROOT LODGING. Root lodging is the percentage of plants that do not root lodge; plants that lean from the vertical axis at an approximately 30° angle or greater would be counted as root lodged.

SDG VGR = SEEDLING VIGOR. This is the visual rating (1 to 9) of the amount of vegetative growth after emergence at the seedling stage (approximately five leaves). A higher score indicates better vigor and a low score indicates poorer vigor.

STA GRN = STAY GREEN. Stay green is the measure of plant health near the time of black layer formation (physiological maturity). A high score indicates better late-season plant health.

STK LDG = STALK LODGING. This is the percentage of plants that did not stalk lodge (stalk breakage) as measured by either natural lodging or pushing the stalks and determining the percentage of plants that break below the ear.

TST WT = TEST WEIGHT UNADJUSTED. The measure of weight of the grain in pounds for a given volume (bushel).

14D. EXHIBIT D. ADDITIONAL DESCRIPTION OF PHK56
INBRED PER SE YIELD TEST COMPARISON OF PHK56 AND PHW43 EVALUATED OVER
THREE YEARS.

YEAR	VAR #	MST ABS	VARIETY #1 - PHK56			VARIETY #2 - PHW43			* = 10% SIG			+ = 5% SIG			# = 1% SIG		
			BAR PLT HT ABS	PLT HT ABS	EAR HT ABS	SDG VGR ABS	EST ONT ABS	GDU STD ABS	SLK GRN ABS	STA GRN ABS	BAR PLT HT ABS	PLT HT ABS	EAR HT ABS	SDG VGR ABS	EST ONT ABS	GDU STD ABS	SLK GRN ABS
87	1	98.8	226.1	83.8	6.7	38.3	1391	1451	4.0								
	2	95.0	218.4	76.2	5.3	37.0	1464	1514	6.0								
	LOCS PROB	.074*	.7	1	.3	10	.03*	.023*	1								
88	1	94.4	165.1	66.8	5.0	28.5	1426	1468	4.3								
	2	98.1	170.2	66.8	4.4	30.5	1478	1500	6.0								
	LOCS PROB	.167	.635	.000*	.102	.18	.000*	.039*	.199								
89	1	11.6	91.6	174.0	50.5	5.6	30.5	1371	1412	4.0							
	2	12.4	92.9	166.5	45.2	5.0	30.3	1404	1443	3.0							
	LOCS PROB	.500	.775	.395	.431	.220	.731	.005*	.009*	.500							
TOTAL SUM	1	11.6	94.8	176.8	59.7	5.5	31.5	1395	1438	4.2							
	2	12.4	95.3	173.5	55.9	4.8	31.9	1442	1475	5.0							
	LOCS DIFF PROB	.2	.22	.9	.9	.18	.43	.42	.40	.6							

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14D. EXHIBIT D. ADDITIONAL DESCRIPTION OF PHK56,
COMPARISON OF PHK56 AND PHZ51 CROSSED TO THE SAME INBRED LINE AND THE
HYBRIDS EVALUATED OVER THREE YEARS.

VARIETY #1 - PHK56 HYBRID
VARIETY #2 - PHZ51 HYBRID

YEAR	VAR #	BU ACR ABS	MST ACR VMN ABS	BAR PLT HT ABS	PLT HT ABS	EAR VGR ABS	SDG CNT ABS	EST CNT ABS	DRP EAR ABS	CDU SHD ABS	TST SLK ABS	GRN CUL ABS	STK WTA ABS	RT LDC ABS	BRT STK ABS	* = 10% SIG			+ = 5% SIG			# = 1% SIG								
																BU	MST	BAR	PLT	EAR	SDG	EST	DRP	CDU	TST	GRN	STK	RT	BRT	
87	1	156.5	101	20.9	98.9	281.4	104.9	5.8	60.3	99.7	1380	56.2	6.8	2.5	91.0	98.4														
	2	164.8	107	20.3	99.2	137.2	5.8	61.0	99.1	1390	56.1	6.6	4.8	93.9	99.4															
	LOCs	6	6	6	3	2	2	3	2	1	1	6	6	6	6															
PROB	.197	.182	.027+	.384	.045+	.031+	.000#	.656	.205			.671	.768	.323	.504	.416														
	1	128.5	104	21.3	90.6	224.0	85.6	6.2	58.8	99.8	1392	57.0	6.7	3.4	91.1	94.5														
	2	125.8	103	21.6	89.8	246.1	102.9	5.4	57.7	99.8	1444	57.4	6.7	4.9	94.5	96.3														
LOCs	39	39	42	19	19	19	19	19	29	21	12	5	40	17	37	14														
	PROB	.289	.592	.358	.753	.000#	.000#	.025+	.187	.974	.001#	.072*	.016*	.889	.000#	.022+	.432													
	1	157.7	106	19.6	98.6	275.3	113.3	5.4	59.0	99.5	1319	57.2	6.4	4.6	84.2	92.8	98.9													
LOCs	2	157.5	101	20.0	97.7	296.2	133.8	5.0	56.5	99.2	1345	57.9	6.4	5.7	92.9	93.0	98.9													
	PROB	.104	.104	.105	.105	.105	.105	.39	.39	.37	.52	.68	.28	.103	.94	.41	.86	.54	.19											
	TOTAL	SUM	1	150.0	106	20.1	95.4	259.3	104.1	5.7	59.0	99.6	1342	57.1	6.5	4.1	86.5	93.3	98.9											
LOCs	2	145.3	102	20.4	94.8	280.4	124.2	5.2	57.0	99.3	1375	57.1	6.7	5.4	93.4	93.6	98.9													
	DIFF	149	149	153	153	153	153	60	60	59	83	95	41	8	149	117	66	129	70	19										
	PROB	.002#	.005#	.055*	.547	.000#	.000#	.002*	.000#	.000#	.026+	.000#	.034+	.000#	.239	.027+	.000#	.000#	.053*	.000#	.000#	.000#	.000#	.000#	.000#	.000#	.000#	.000#	.000#	

YEAR	VAR #	BU ACR ABS	MST ACR VMN ABS	BAR PLT HT ABS	PLT HT ABS	EAR VGR ABS	SDG CNT ABS	EST CNT ABS	DRP EAR ABS	CDU SHD ABS	TST SLK ABS	GRN CUL ABS	STK WTA ABS	RT LDC ABS	BRT STK ABS	* = 10% SIG			+ = 5% SIG			# = 1% SIG								
																BU	MST	BAR	PLT	EAR	SDG	EST	DRP	CDU	TST	GRN	STK	RT	BRT	
87	1	156.5	101	20.9	98.9	281.4	104.9	5.8	60.3	99.7	1380	56.2	6.8	2.5	91.0	98.4														
88	1	128.5	104	21.3	90.6	224.0	85.6	6.2	58.8	99.8	1444	57.0	6.7	3.4	91.1	94.5														
89	1	157.7	106	19.6	98.6	275.3	113.3	5.4	59.0	99.5	1319	57.2	6.4	4.6	84.2	92.8	98.9													
TOTAL	SUM	1	150.0	106	20.1	95.4	259.3	104.1	5.7	59.0	99.6	1342	57.1	6.5	4.1	86.5	93.3	98.9												
LOCs	149	149	153	153	153	153	60	60	59	83	95	41	8	149	117	66	129	70	19											
DIFF	47	47	0.4	0.3	0.7	21.1	20.1	0.5	2.0	0.3	33	51	0.6	0.2	1.3	0.6	0.2	1.3	0.3	0.6	0.2	1.3	0.3	0.6	0.2	0.3	0.6	0.2		
PROB	.002#	.005#	.055*	.547	.000#	.000#	.002*	.000#	.000#	.026+	.000#	.034+	.000#	.016+	.000#	.053*	.000#	.000#	.000#	.000#	.000#	.000#	.000#	.000#	.000#	.000#	.000#	.000#		

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14D. EXHIBIT D. ADDITIONAL DESCRIPTION OF PHK56
COMPARISON OF PHK56 AND PHJ90 CROSSED TO THE SAME INERED LINE AND THE
HYBRIDS EVALUATED OVER TWO YEARS.

VARIETY #1 - PHK56 HYBRID
VARIETY #2 - PHJ90 HYBRID

YEAR	VAR #	* = 10% SIG										+ = 5% SIG										
		BU ACR	MST ACR	BAR HT	PLT HT	EAR HT	SDG VGR	EST CNT	DRP EAR	CDU SHD	CDU SLK	TST WTA	GRN QUL	STA GRN	STK QUL	RT LDG	RT LDG	BT STK	BT STK	BT ABS	BT ABS	
88	1	172.1	107	20.1	240.0	106.2	7.5	69.5	1450	57.2	57.6	5.0	97.7	100.0								
	2	167.4	105	21.5	227.3	97.8	6.8	69.0	1470	57.4	6.1	6.0	97.3	100.0								
	LOCS	.594	.684	.265	.4	.126	.386	.656	.2	1												
	PROB	.590	.684	.265	.4	.126	.386	.656	.2	1												
89	1	146.7	106	19.7	97.5	275.6	113.5	5.7	60.5	99.6	1303	1316	57.0	6.0	5.2	88.3	95.3	95.3	94.8			
	2	143.0	103	20.6	97.3	277.6	116.6	5.7	59.6	99.5	1305	1338	57.7	6.8	5.1	91.8	93.5	93.5	98.4			
	LOCS	.62	.62	.63	.63	.11	.25	.25	.40	.39	.39	.39	.61	.61	.61	.28	.52	.34	.34			
	PROB	.62	.62	.63	.63	.11	.25	.25	.40	.39	.39	.39	.61	.61	.61	.28	.52	.34	.34			
	.034+.032*	.000#	.863	.393	.071*	.672	.234	.610	.039+	.184	.000#	.002#	.665	.015+	.463	.433						
	TOTAL SUM	1	148.2	106	19.7	97.5	272.8	112.8	5.8	60.8	99.6	1310	1316	57.0	6.0	5.2	89.0	95.4	94.8			
	2	144.5	103	20.7	97.3	273.8	115.3	5.7	59.8	99.5	1313	1338	57.7	6.8	5.1	92.2	93.7	93.7	98.4			
	LOCS	.66	.66	.67	.67	.11	.27	.27	.32	.41	.39	.20	.5	.65	.31	.29	.56	.35	.35			
	DIFF	.37	.37	.10	.02	.10	.25	.01	.13	.01	.13	.22	.07	.08	.01	.32	.17	.37	.37			
	PROB	.026+.028+	.000#	.863	.669	.180	.523	.228	.610	.034+	.184	.000#	.002#	.775	.016+	.463	.433					

YEAR	VAR #	* = 10% SIG										+ = 5% SIG									
		BU ACR	MST ACR	BAR HT	PLT HT	EAR HT	SDG VGR	EST CNT	DRP EAR	CDU SHD	CDU SLK	TST WTA	GRN QUL	STA GRN	STK QUL	RT LDG	RT LDG	BT STK	BT STK	BT ABS	BT ABS

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14E. EXHIBIT E. Statement of the Basis of Applicant's Ownership

Pioneer Hi-Bred International, Inc., Des Moines, Iowa, is the employer of the plant breeders involved in the development and evaluation of PHK56. Pioneer Hi-Bred International, Inc. has the sole rights and ownership of PHK56.